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Analysis of the Contribution of Anthropometry and Physical Conditions to the Spike Ability of the Praporprov Volleyball Team of Semarang City in 2022

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Abstract

The purpose of this study is to analyze the contribution of anthropometry and physical condition to the spike ability of the Semarang City Praporprov Volleyball Team in 2022. The research method used is the quantitative method with a descriptive approach. This research uses survey methods and techniques, namely test and measurement techniques. A study sample of 28 athletes. The instruments studied are components of anthropometry (height, weight, arm length, leg length and sitting height) and physical condition components (strength, speed, flexibility, explosiveness, and agility) to spike ability. Research shows that 1) there is a distribution between anthropometry and spikes that is normal, and 2) there is an influence of distribution between physical conditions and regular spikes. 3) there is a positive relationship between anthropometry and spike ability with a strong relationship category 4) there is a positive relationship between physical condition and spike ability with the category of relationships that the relationship is moderate. 5) there is a contribution of influence made by anthropometry and physical condition on the *spike* ability of the Praporprov volleyball team in Semarang City in 2022. Conclusion There is a relationship between anthropometry and the spike ability of the Semarang City Praporprov volleyball team in 2022. There is an anthropometric contribution to the spike ability of the Semarang City Praporprov volleyball team in 2022. The physical condition contributes to the spike ability of the Praporprov Semarang City volleyball team in 2022. There is a contribution of influence made by anthropometry and physical condition on the *spike* ability of the Praporprov volleyball team in Semarang City in 2022.

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INTRODUCTION

This study is more in-depth about the anthropometric parts and physical conditions most significantly influential in the volleyball game. In this study, each athlete has measured by anthropometry and their physical condition

was then assessed for spike ability. Everyone can play the game of volleyball, but the level of knowledge can be calculated like this to improve each athlete's shortcomings and performance. Many coaches and clubs must learn which parts are most needed in the volleyball game.

The game of volleyball is to pass the ball over the net to fall to touch the floor of the opponent's court and to prevent the same effort from the opponent. Each team can play three rebounds to return the ball (outside of blocks). The ball is declared in play after the ball is hit by a *serv*ing player passing over the net into the opponent's area. The game continues until the ball hits the floor, is "out", or a team returns the ball perfectly. PP. PBVSI, (2005). High sports achievement cannot be separated from coaching carried out as early as possible through talent search, breeding, education and sports training based on science and technology more effectively. Increasing achievement in sports and requiring adequate facilities and infrastructure also requires achievement coaching, especially from an early age.

Semarang City, the capital of Central Java, is increasing, and the community has a high enthusiasm for developing the world of sports, one of which is volleyball. The Semarang city team performs well in the Central Java provincial competition. Achievements must be built through a planned, tiered, sustainable coaching and development process with sports science and technology support. Achieving maximum achievement is not easy, but it takes regular training, hard work and intensive coaching.

A volleyball athlete needs to master the techniques of the game volleyball, such as *passing, spike, service,* and *block*, with various variations. However, the running of a game is not only influenced by technical factors; there are essential things that must be known, namely anthropometry and players' physical condition. Spike is the major blow in the attack to achieve victory (Siswanto, 2012). According to Agung Wahudi (2017: 40-41), attack or *attack* is better known as I spike I or I hit; it is a technique I punch that I famous and I skill that me Pride in Sports Volleyball. To achieve brilliant success in this spike, high achievement and high jumping ability are needed (Kumar &; Kumar, 2020). Spike is achieved when players master other volleyball basics before players can spike good passing (Junaidi, 2016). Experts also define spikes almost the same as one another, which makes the difference in the division of the process of a spike (Septiyanto &; Suharjana, 2017)

Anthropometry plays a role in sports, especially volleyball, so that it can find out the somatotype of volleyball players. A player who has an ideal body is expected by a coach, in addition to expecting an ideal body is also expected to have good talent and physical ability. A player with good physical abilities but an inappropriate body shape is likely not to achieve optimal achievements, such as players with good physical condition and posture (D'Anastasio et al., 2019). Volleyball is closely related to the physical condition and proportional posture. To improve volleyball performance, the supporting factor for achievement is anthropometry in athletes,

which significantly affects performance improvement by including height, weight, arm length, sitting height, and leg length (Ramadan & Ningrum, 2019; Ratames. 2018).

The physical condition itself is needed in all sports, including volleyball. To get excellent physical condition, volleyball athletes must undergo routine and systematic training so that the ability of the organs and the level of physical freshness of athletes can increase, especially for early-age athletes (Nesic, 2014). Physical condition is one of the most critical components of an exercise program for improving athlete performance. Judging from the characteristics of volleyball games that tend to be fast and precise, athletes must make explosive movements as much as possible. Therefore, the physique is the initial foundation for athletes' achievements (Vidya Putri &; Jatmiko, 2018).

According to Fenanlampir, A. &; Muhyi, M, F (2015), the dominant components of physical condition in volleyball are: 1) strength (strength). The strength measured is the endurance of the abdominal muscles and length. How to measure abdominal muscles by doing sit-ups for 1 minute and measuring arm muscles by doing push-ups for 1 minute. 2) Power. The power measured is the athlete's arm power and leg power. Arm power measurement using a 2.7216 kg medicine ball throw test and leg power measurement using vertical jump. 3) Speed (speed) how to measure speed in volleyball is by using a 30-meter running speed test 4) Flexibility is a person's effectiveness in extending a vast body. In measuring flexibility using the sit and reach test, this test is carried out twice in a row and then takes the best results. 5) Agility. How to measure athlete agility using the hexagonal obstacle test is a test using a 66 cm hexagon area. The athlete is in the middle, then when the command starts, the athlete jumps with both feet above line B and Back to centre, then crosses line C and Back to centre and so on; when the athlete jumps on line A and Back to the centre is considered as one lap. Athletes do three laps. After completing this research, the results were obtained theoretically, namely making scientific contributions in sports, especially volleyball. In particular, the study is also expected to contribute to one of the trainer's planned exercise programs.

The objectives of this study include; 1) To analyze the contribution of anthropometry to the spike ability of the Semarang city Praporprov volleyball team in 2022. 2) To analyze the contribution of physical condition to the spike ability of the Semarang City Praporprov volleyball team in 2022. 3) To analyze the contribution between anthropometry and physical condition to the spike ability of the Praporprov volleyball team Semarang City in 2022

METHODS

This research uses the quantitative method with a descriptive approach. This type of research uses quantitative descriptive with comparative tests and is designed with an observational design (Ramadan & Juniarti, 2020). This research uses survey methods and techniques, namely test and measurement techniques. The sample in this study was carried

out with the type of total sampling. Where this sample uses the entire sample and does not select sample members. Before the test, the sample is not sick or injured and performs earnestly without coercion. In this test, the sample of Semarang city Praporprov athletes in 2022 amounted to 28 athletes. The process of this study was carried out with a single data collection. All samples are informed of the research flow and procedure for using test equipment; Each sample will be measured using the specified tool or instrument. This research is in the preparatory stage. Before the research is carried out, it is necessary to make several preparations: 1) Determine the subject of research; 2) Coordinate with coaches to request athletes' permission to be sampled in the study; 3) Apply for a research permit addressed to the Semarang city pbvsi management.

Implementation Procedure

1. Setting up research tools
2. Associate the following research procedures with athletes: 1. Athletes must dress and wear sports shoes when conducting tests. 2. Athletes sampled must be in top shape or healthy. 3. The athlete must warm up for approximately 15 minutes before the test. 4. The athlete must take such tests seriously.
3. Treated according to the procedure described
4. Data retrieval is done.
5. Analysis of all data that has been obtained is then carried out in data management.

Measurement execution procedure

1. All athletes perform test instruments that researchers have determined
2. Athletes one by one to the place of data collection that has been determined
3. When conducting anthropometric tests, alters do not use footwear using tools that researchers have given
4. When testing, the athlete's physical condition performs according to the instrument/instructions determined by the researcher.

Spike assessment procedure

The athlete tries to deploy the ball to a large number target, namely the number 5, that has been determined to measure the accuracy of the smash. Athletes are given five strokes: 1) The score consists of two parts: the number of goals on the field and the time the speed at which the ball runs calculated from the stopwatch; 2) Time scores are recorded in seconds to tenths; 3) Score 0 (zero) if when hitting the hand touches the net, the ball does not pass through the net, or the ball falls off the field or target; 4) The ball that falls right on the target line is counted as having entered the target with a more significant number; 5) The score is the sum of numbers collected from the five times the chance of smashing.

The data collection technique used in this study is a survey method with measurement techniques and tests. The primary step in data collection techniques is to adjust what will be researched. Then determine the focus of the problem to be reviewed by the researcher. The data taken in this study is anthropometry which includes height, weight, arm length and leg length. In contrast, physical conditions include arm muscle strength, abdominal muscle strength, speed, flexibility, explosive power,

and agility. And the accuracy of the spike by a spike to a position that has been determined with each value.

Technical data analysis used for hypothesis testing in this research uses the Normality Test, Correlation Test and Contribution Test. The correlation test was used to determine the relationship between students' interest and critical thinking skills using the SPSS 22.0-assisted Pearson correlation test. Based on the value of Pearson Correlation in the Correlations table, it can be known that the relationship that occurs is positive or negative, and based on the guidelines for the degree of correlation relationship, it can be known that the correlation value is substantial, medium, weak and so on. While the Contribution Test is used to determine the contribution of support for both independent variables to the dependent variable.

FINDINGS AND DISCUSSION

There is a positive contribution between anthropometry to the spike ability of the Semarang City Praporprov football team in 2022. There is a positive contribution to the physical condition of the Semarang City Praporprov football team's spike ability in 2022. There is a good contribution of influence given by anthropometry and physical condition to the spike ability of the Semarang City Praporprov volleyball team in 2022.

Findings

The results of the study "Anthropometric Analysis and Physical Condition of the Spike Ability of the Semarang City Praporprov Volleyball Team in 2022.

Table 1 prerequisite test results

No	HASIL	sig		α	Pearson Correlation
1	Uji Normalitas Antropometri	0,2	>	0,05	—
2	Uji Normalitas Kondisi Fisik	0,2	>	0,05	—
3	Uji Korelasi 1 Antropometri Terhadap Spike	0,001	<	0,05	0,604
4	Uji Korelasi 2 Kondisi Fisik Dengan Spike	0,024	<	0,05	0,425
5	Uji korelasi 3 berganda atropometri dan Kondisi Fisik terhadap spike	0,003	<	0,05	0,604

Table 2 contribution test results

No	HASIL	r^2	persentase	hasil
6	uji kontribusi 1	0,604	x 100%	36,50%
7	uji kontribusi 2	0,425	x 100%	18,10%
8	uji kontribusi 3	0,604	x 100%	36,50%

Table 3 relationship criteria

Nilai Pearson Correlation	Kategori
0,00 – 0,20	Tidak Ada Korelasi
0,21 – 0,40	Korelasi Lemah
0,41 – 0,60	Korelasi Sedang
0,61 – 0,80	Korelasi Kuat
0,81 – 1,00	Korelasi Sempurna

DISCUSSION

The discussion is on the findings of the data above; in general, it can be concluded that anthropometry and physical condition affect the spike ability of volleyball athletes, praporprov Semarang city. Based on the above results from anthropometric tests consisting of height, weight, arm length, leg length, and sitting height is 0.200. It is clear that 0.200 > 0.05 are then H_0 accepted. It can be concluded that Anthropometric variables are normally distributed. The anthropometric component plays a positive role in the *spike* ability of volleyball athletes in the city of Semarang. Anthropometry means the level of the human body obtained from measuring several body components.

Based on the results above, the physical condition test consisting of abdominal muscles, arm and shoulder muscles, speed, flexibility, leg muscles, arm muscles, and agility is 0.200. It is clear that 0.200 > 0.05 are then H_0 accepted. So the Physical Condition variable is normally distributed. The physical condition component plays a positive role in the *spike* ability of volleyball athletes in the city of Semarang. Physical condition dramatically affects the quality and ability of athletes. Athletes with this component will be easier to move and more effective in playing volleyball. Athletes with this component will be easier to move and more effective in playing volleyball. Strength is the ability to maximize the contraction of a group of muscles. Muscle strength results can support athletes' performance (Bompa, 2015

Based on the Pearson Correlation value of 0.604, it can be seen that the relationship that occurs is positive, meaning that the higher the anthropometric variable, the higher the variable spike ability of the Semarang City Praporprov volleyball team in 2022, and vice versa. Based on the guidelines for the degree of correlation relationship, the Pearson Correlation value of 0.604 means the correlation or relationship is strong. Based on the Pearson Correlation value of 0.425, it can be seen that the relationship that occurs is positive, meaning that the higher the physical condition variable, the higher the variable spike ability of the Semarang City Praporprov volleyball team in 2022, and vice versa. Based on the degree of correlation

relationship guideline, the value of Pearson Correlation of 0.425 means that the correlation or relationship is moderate. Multiple correlations Based on the R-value of 0.604, it can be seen that the relationship that occurs is positive, meaning that the higher the anthropometric variables and physical conditions, the higher the spike ability variable of the Semarang City Praporprov volleyball team in 2022, and vice versa. Based on the guideline of the degree of correlation relationship, the R-value of 0.604 means that the correlation or relationship is strong

In the contribution test I, what is considered is the coefficient of determination (). The coefficient of determination shows the extent of the contribution of the independent variable to the dependent variable, in this case, the contribution between anthropometry to the r^2*spike* ability of the Semarang City Praporprov volleyball team in 2022. The value of the coefficient of determination is between 0 and 1. It is known that the coefficient of determination is 0.365, meaning that 36.5% of the contribution of influence given by anthropometry on the *spike* ability of the Semarang City Praporprov volleyball team in 2022.

In the contribution test II, what is considered is the coefficient of determination (). The coefficient of determination shows the extent of the contribution of the independent variable to the dependent variable, in this case, the contribution between r^2physical conditions to the *spike* ability of the Semarang City Praporprov volleyball team in 2022. The value of the coefficient of determination is between 0 and 1. It is known that the coefficient of determination is 0.181, meaning that 18.1% is the contribution of the influence given by physical condition on the *spike* ability of the Semarang City Praporprov volleyball team in 2022.

In the III contribution test, what is considered is the coefficient of determination (). The coefficient of determination shows the extent of the contribution of the independent variable to the dependent variable, in this case, the contribution between anthropometry and physical condition to the *spike* ability of the Semarang City Praporprov volleyball team in 2022. The value of the coefficient of determination is between 0 and 1. It is known that the coefficient of determination is 0.365, meaning that 36.5% of the contribution of influence given by anthropometry and physical condition to the *spike* ability of the Semarang City Praporprov volleyball team in 2022.

CONCLUSION

To analyze the contribution of anthropometry to the *spike* ability of the Semarang city Praporprov volleyball team in 2022. To analyze the contribution of physical condition to the spike ability of the Semarang City Praporprov volleyball team in 2022. To analyze the contribution between queuepometry and physical condition to the spike ability of the Semarang City Praporprov volleyball team in 2022.

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